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10/522,897	02/01/2005	Marc Vertes	FR920050802US1	8427
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IBM CORP (AP) C/O AMY PATTILLO P. O. BOX 161327 AUSTIN, TX 78716			EXAMINER RIAD, AMINE	
			ART UNIT 2113	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/522,897	<b>Applicant(s)</b> VERTES ET AL.	
	<b>Examiner</b> AMINE RIAD	<b>Art Unit</b> 2113	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 40-58 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 40,41 and 48-58 is/are rejected.
- 7) ☒ Claim(s) 42-47 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

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**Detailed Action**

Claims 40-58 have been presented for examination.

Claims 40, 41, 48-58 have been rejected.

Claims 42-47 have been objected to.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 40, 41, 48-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kelkar U.S. Patent 7,058,846 in view of Franckowiak U.S. Patent Application 2003000356.

In regard to claims 40, 58 .

computer implemented method for replicating a software application,

the computer implemented method comprising:

executing the software application on a primary node to form a master application;

identifying resources and dependencies required by the master application to form required resources; (Column 4; lines 49-53)

Kelkar does not disclose *updating the required resources dynamically on the primary node; generating a structure of the master application and a dynamic graph of the required resources from the required resources;*

*replicating the resources by transferring the structure to a set of secondary nodes via a*

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*network to form a replica; wherein the set of secondary nodes comprises one or more secondary nodes; restoring the replica on the set of secondary nodes to form a set of clone software applications, wherein the set of clone software applications comprises one or more clone software applications; executing the set of clone software applications on the set of secondary nodes, without loss of context; and updating the set of clone software applications with incremental updates of the required resources of the master application to create a hot standby application.*

Franckonwiak teaches updating the required resources dynamically on the primary node; (Paragraph 42) generating a structure of the master application and a dynamic graph of the required resources from the required resources;(Figure 2 ; item 56) replicating the resources by transferring the structure to a set of secondary nodes via a network to form a replica; wherein the set of secondary nodes comprises one or more secondary nodes; restoring the replica on the set of secondary nodes to form a set of clone software applications, wherein the set of clone software applications comprises one or more clone software applications; executing the set of clone software applications on the set of secondary nodes, without loss of context; and updating the set of clone software applications with incremental updates of the required resources of the master application to create a hot standby application.(Figure 2; items 58,60,68,70,72,74) [This figure clearly shows that whatever process takes place in the first node the system will mirror that in the second node]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate *updating the required resources dynamically on the*

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*primary node; generating a structure of the master application and a dynamic graph of the required resources from the required resources;*

*replicating the resources by transferring the structure to a set of secondary nodes via a*

*network to form a replica; wherein the set of secondary nodes comprises one or more*

*secondary nodes; restoring the replica on the set of secondary nodes to form a set of*

*clone software applications, wherein the set of clone software applications comprises*

*one or more clone software applications; executing the set of clone software*

*applications on the set of secondary nodes, without loss of context; and updating the set*

*of clone software applications with incremental updates of the required resources of the*

*master application to create a hot standby application of Franckowiak into the method*

*for replicating a software application of Kelkar. A person of ordinary skill in the art would*

*have been motivated to apply updating the required resources dynamically on the*

*primary node; generating a structure of the master application and a dynamic graph of*

*the required resources from the required resources; replicating the resources by*

*transferring the structure to a set of secondary nodes via a network to form a replica;*

*wherein the set of secondary nodes comprises one or more secondary nodes; restoring*

*the replica on the set of secondary nodes to form a set of clone software applications,*

*wherein the set of clone software applications comprises one or more clone software*

*applications; executing the set of clone software applications on the set of secondary*

*nodes, without loss of context; and updating the set of clone software applications with*

*incremental updates of the required resources of the master application to create a hot*

*standby application of Franckowiak because as Franckowiack discloses "In an effort to*

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achieve high availability, RCS application processors are paired to form mated processor pairs in an active/standby”

Arrangement. When a fault occurs on the active processor, the standby process is elevated to the active role to continue providing service.

In regard to claim 41

Kelkar discloses the computer implemented method according to claim 40, wherein replicating the resources further comprises:

creating and maintaining a dependency tree, based on the dynamic graph, supplying, at all times, information on the replicated resources. (Column 4; lines 53-56) [the synchronization of resource configuration necessitates respecting a dependency hierarchy, and a dynamic information provision]

In regard to claim 48

Kelkar discloses the computer implemented method according to claim 40, wherein replicating the resources further comprises:

replicating applicative data files between the primary node, whereon the software application is run, and a stand-by node. (Column 5; lines 8-14)

In regard to claim 49

Kelkar discloses the computer implemented method according to claim 40, wherein replicating the resources further comprises:

ensuring functional continuity of the software application in a multi-computer architecture cluster, the software application being executed at a given time on one of the computers of the cluster, called the primary node, while other computers of the

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cluster are called a set of secondary nodes, wherein ensuring functional continuity further comprises: replicating the software application on at least one of the secondary nodes to provide a set of clones of the application, wherein the set of clones comprises one or more clones; updating the set of clones, and responsive to detecting an event affecting the primary node, switching from the software application being executed on the primary node, to the software application being executed on the set of clones.

(Figure 2; [this figure shows 2 nodes 110A and 110B])

In regard to claim 50

Kelkar discloses the computer implemented method according to claim 49, wherein replicating the software application is of a holistic nature. (Column 3; lines 36-39 “the fact that the copying is synchronized makes the replica consistent”)

In regard to claim 51

Kelkar discloses the computer implemented method according to claim 49, wherein updating the set of clones further comprises updating the set of clones of the application. (Column 3; lines 33-36)

In regard to claim 52

Kelkar discloses the computer implemented method according to claim 49, wherein ensuring functional continuity further comprises supervising a state of the resources necessary to operate the software application. (Column 8; lines 48-50)

In regard to claim 53

Kelkar discloses the computer implemented method according to claim 49, wherein detecting an event affecting the primary node further comprises:

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responsive to detecting an event affecting the primary node, electing a clone to be substituted for the primary node of the software application, wherein the secondary node on which the clone elect is installed becomes a new primary node. (Column 9; lines 14-19) [Examiner understands that when concurrency happens the manager is forced to elect, and that how one clone gets to be chosen over the other one]

In regard to claim 54

Kelkar discloses the computer implemented method according to claim 53, wherein replicating the resources further comprises:

recording, on the set of clones, messages received by the primary node, the messages being injected into the clone elected as the new primary node when switching. (Column 7; lines 5-8) and (Column 6; lines 1-2)

In regard to claim 55

Kelkar discloses the computer implemented method according to claim 40, wherein replicating the resources further comprises:

optimization of information processing resources by load sharing and dynamic process distribution. (Column 1; line 28)

In regard to claim 56

Kelkar discloses the computer implemented method according to claim 40, wherein replicating the resources further comprises:

performing non-interruptive maintenance by process relocation upon request, over a data- processing resource network. (Summary) [Examiner considers maintenance a



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deliberate failure HINT shutting down purposely]

In regard to claim 57

Kelkar discloses the computer implemented method according to claim 40, wherein replicating the resources further comprises:

preserving applicative context in a mobile application. (Column 10; line 55)

### ***Allowable Subject Matter***

Claims 42-47 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### **Response to Applicant Argument**

Applicant's argument submitted May 19, 2009 has been fully considered and is not persuasive.

In regard the argument which states "Thus, the synchronized resource configuration data described in Kelkar refers to configuration data for storage systems, not for software applications. The Examiner does not point to any portion of Kelkar, which teaches executing a software application on a primary node to form a master application. " Examiner respectfully disagrees. Examiner points Applicant to Kelkar Abstract where Kelkar discloses, "to enable other nodes in a cluster to resume operations of a failed node. These operations include storage management" It is clear that Kelkar is not only about configuration of storage systems, but this activity is among other which include software application configuration. Argument is not valid.

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In regard the argument which states, "Applicants note that the Examiner does not recite any portion of Franckonwiak as reading on executing the software application on a primary node to form a master application or identifying resources and dependencies required by the master application to form required resources " Examiner brings Applicant attention that this limitation was not rejected under Franckonwiak, but Kelkar. Argument is not valid.

In regard the argument which states, "In view of the lack of teaching in Kelkar or Franckonwiak of the claimed elements of a master application or identifying resources and dependencies required by the master application to form required resources, the Office Action does not provide a clear articulation of why claim 40 would be obvious in view of Kelkar and Franckonwiak and it is clear that the Office Action has failed to establish a prima facie case of obviousness as to claim 40" Examiner respectfully disagrees. The Office Action provides a clear articulation of why it would be obvious to combine Franckonwiak with Kelkar as stated in the Office Action "In an effort to achieve high availability, RCS application processors are paired to form mated processor pairs in an active/standby arrangement. When a fault occurs on the active processor, the standby process is elevated to the active role to continue providing service"

Franckonwiak Paragraph 7, additionally Kelkar discloses in (Column 2) "what is needed is a system that enables other nodes in a cluster to resume operations of a failed node. In some environments, configuration data about storage resources are maintained in files or databases on the host computer system. If a server for a given storage resource fails, configuration data about the storage can be inaccessible to other nodes in the

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cluster, A new node resuming operations of the failed node would be unaware of the configuration change and may be unaware of the configuration change and may be unable to communicate properly with the configured storage " As it is clear from both disclosures the Kelkar reference offers a solution so that a node can resume in real time, but does not offer a mated node, on the other hand Franckonwiak offers a mated processor or node which will make resuming after a failure faster and more reliable and will increase over all the availability of the system. Argument is not valid.

In regard the argument which states "Applicants respectfully submit that in view of the scope and contents of Franckonwiak and the differences between Franckonwiack and the claimed elements of generating a structure of the master application or replicating the resources by transferring the structure to a set of secondary nodes via a network to form a replica, including Frankonwiak clearly teaching away from generating a structure of an application " Examiner respectfully disagrees. A teaching away argument cannot be made with respect to one limitation, a teaching away argument has to look as whether the references are combinable or not as a whole not with respect to one limitation of claim 40. "A *prima facie* case of obviousness can be rebutted if the applicant...can show that the art in any material respect 'taught away' from the claimed invention...A reference may be said to teach away when a person of ordinary skill, upon reading the reference...would be led in a direction divergent from the path that was taken by the applicant." *In re Haruna*, 249 F.3d 1327, 58USPQ2d 1517 (Fed. Cir. 2001). As previously demonstrated the two references are combinable. Argument is not valid. The Office did not ere in finding *prima facie* of obviousness in regard to claim 40.

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In regard the argument which states, "In a Graham inquiry, as to the difference between Kelkar and claim 41, Applicants respectfully submit that Kelkar does not teach the elements of claim 41 because the synchronizing of data storage resource configuration data on multiple nodes described in Kelkar is not the same as creating an maintaining a dependency tree, based on the dynamic graph of the required resources for an application. The Office Action does not cite any portion of Franckonwiak as reading on claim 41." Examiner respectfully disagrees. The Microsoft Computer Dictionary defines synchronization in application or database files as version comparison of copies of the file to ensure they contain the same data, additionally Kelkat discloses in (Column 5; lines 55 and up "Nodes 110A and 110B share resources configuration data and each node has respective copy, respectively labeled resource configuration data 370A and resource configuration data 370B. Each of resource configuration data 370A and 370B includes respective resource attributes 372A and 372B. Resource configuration 370A and 370B including resource attributes 372A and 372B, are maintained as synchronized copies using cluster communication channel 215 " The Examiner states here the dependence and the tree is respected during the SYNC between the two resource attributes and the resource configuration. Argument is not valid. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then

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the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

### **Contact**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMINE RIAD whose telephone number is (571)272-8185. The examiner can normally be reached on 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on 571-272-3645. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Robert W. Beausoliel, Jr./

Supervisory Patent Examiner, Art Unit 2113